

## ELECTRONIC DEVICE INCLUDING INPUT APPARATUS

### PRIORITY

[0001] This application claims priority under 35 U.S.C. §119(a) of a Korean Patent Application filed on Jul. 31, 2015 in the Korean Intellectual Property Office and assigned Serial No. 10-2015-0109189, the entire content of which is incorporated herein by reference.

### BACKGROUND

[0002] 1. Field of the Disclosure

[0003] The present disclosure relates to an electronic device including an input device for reducing input malfunctions, and more particularly, to an electronic device including an input device that may be mounted in a narrow space of a user device, which reduces impact-related input malfunctions.

[0004] 2. Description of the Related Art

[0005] With the development of the electronics communication industry in recent years, a user device (e.g., a cellular phone, an electronic organizer, a personal data assistant, a laptop computer, etc.) has become a necessity of modern life as an important means for delivering information, which changes rapidly.

[0006] In general, a user device provides various input devices for receiving a user input.

[0007] As a user device becomes thinner, there may be insufficient space to mount an input device. Further, if a user device experiences an impact, it may be difficult to maintain electrical contact between elements in the input device, which may

### SUMMARY

[0008] The present disclosure provides an electronic device that includes an input device that may be mounted in a narrow space of a user device, which reduces impact-related input malfunctions.

[0009] In accordance with an aspect of the present disclosure, an electronic device is provided. The electronic device includes a housing including a window, configured to form a 1<sup>st</sup> side of the electronic device, and a 2<sup>nd</sup> side of the electronic device directed in an opposite direction of the 1<sup>st</sup> side of the electronic device, a circuit board between the 1<sup>st</sup> side and the 2<sup>nd</sup> side of the electronic device, and including an input circuit configured to detect an input based on a change in a capacitance, a spacer between the window and the circuit board, and having at least one space formed on one side facing the circuit board, a contact electrically connected to the input circuit by being mounted to one side of the circuit board, and contained in the at least one space, and a conductive plate coupled to the spacer, and electrically connected to the contact through the at least one space.

[0010] In accordance with another aspect of the present disclosure, an electronic device is provided. The electronic device includes a housing including a window, configured to form a 1<sup>st</sup> side of the electronic device including a 1<sup>st</sup> through-hole, and a 2<sup>nd</sup> side of the electronic device directed in an opposite direction of the 1<sup>st</sup> side of the electronic device, a circuit board between the 1<sup>st</sup> side and the 2<sup>nd</sup> side of the electronic device, and including an input circuit configured to detect an input based on a change in a capacitance, a spacer between the window and the circuit

board including a 2<sup>nd</sup> through-hole and at least one 3<sup>rd</sup> through-hole placed around the 2<sup>nd</sup> through hole, a button inserted in the 1<sup>st</sup> through-hole and the 2<sup>nd</sup> through-hole, wherein the button is capable of being pressed in a direction from the 1<sup>st</sup> side of the electronic device to the 2<sup>nd</sup> side of the electronic device, a pressing switch mounted to one side of the circuit board, between a pair of contacts, and electrified by pressing the button, a pair of conductive plates between the at least one 3<sup>rd</sup> through-hole and the window and coupled to the spacer under the window and being separated from the circuit board, and the pair of contacts configured electrically connected to the pair of conductive plates, respectively, in an elastically transformed state through the at least one 3<sup>rd</sup> through-hole.

### BRIEF DESCRIPTION OF THE DRAWINGS

[0011] FIGS. 1A and 1B are perspective views of an electronic device according to an embodiment of the present disclosure;

[0012] FIG. 2 is a perspective view of an electronic device, viewed in various directions, according to an embodiment of the present disclosure;

[0013] FIG. 3A is an exploded perspective view of an electronic device according to an embodiment of the present disclosure;

[0014] FIGS. 3B and 3C are diagrams of an electronic device and a cross-sectional view of another electronic device, respectively, according to an embodiment of the present disclosure;

[0015] FIG. 4A is a diagram of an input device according to an embodiment of the present disclosure;

[0016] FIG. 4B is a diagram of a button plate according to an embodiment of the present disclosure;

[0017] FIGS. 5A and 5B are diagrams of an electronic device and a coupling state between a spacer and a circuit board, viewed in a direction from a front side to a back side of the electronic device, respectively, according to an embodiment of the present disclosure;

[0018] FIG. 6 is a diagram of a coupling state between a spacer and a circuit board, viewed in a direction from a back side to a front side of an electronic device, according to an embodiment of the present disclosure;

[0019] FIGS. 7A and 7B are a cross-sectional view and a partial view of a coupling state between a spacer and a circuit board, respectively, according to an embodiment of the present disclosure;

[0020] FIGS. 8A-8C are diagrams of an electronic device, a cross-sectional view, and a partial view of a coupling state among a spacer, a circuit board, a case frame, and a cover, respectively, according to an embodiment of the present disclosure;

[0021] FIGS. 9A-9C are diagrams of an electronic device, a cross-sectional view, and a partial view of a coupling state among a display device, a spacer, a button plate, a circuit board, a case frame, and a cover, respectively, according to an embodiment of the present disclosure;

[0022] FIGS. 10A and 10B are diagrams of an electronic device and a portion of the electronic device, viewed in a direction from a front side to a back side, according to an embodiment of the present disclosure;

[0023] FIG. 11 is a diagram of a portion of an electronic device, viewed in a direction from a back side to a front side, according to an embodiment of the present disclosure;